

LDEQ Responses to EPA R6 Comments:**EPA R6 Evaluation of LDEQ Draft Rule and Supporting Documents for Dissolved Oxygen (DO) Criteria Revisions in eastern Lower Mississippi River Alluvial Plains (LMRAP) Ecoregion****EPA R6 Comment**

1. Clarifying LAC 33:IX.1123, Table 3 to ensure 2.3 mg/L DO criterion applies to streams only. The June 7, 2013, eastern LMRAP UAA for the revision of DO criteria explains that the recommended 2.3 mg/L DO criterion (applicable Mar-Nov) applies to streams in the eastern LMRAP. However, as currently presented in the draft rule revisions for LAC 33:IX.1123, Table 3 and given the applicability statement at LAC 33:IX.1113.C (see italics below), the 2.3 mg/L DO criterion (applicable Mar-Nov) would [incorrectly] apply to all waters (not just the stream waterbody type) within the subsegments identified.

Numerical criteria identified in LAC 33:IX.1123, Table 3, apply to the specified water bodies, and to their tributaries, distributaries, and interconnected streams and water bodies contained in the water management subsegment...

The applicability to streams only needs to be clarified in LA's WQS, especially for those subsegments that include various waterbody types. Clarification could be accomplished by adding an EndNote to LAC 33:IX.1123, Table 3. For example, an EndNote could be added to the row that reads "Lake Pontchartrain Basin (04)" with an accompanying description at the end of the table to clarify that the ecoregion-based 2.3 mg/L DO criterion applicable Mar-Nov only applies to streams, with the 5.0 mg/L criterion applying Dec-Feb in streams and year round to other waterbody types within the subsegment.

LDEQ Response

1. LDEQ addressed the applicability of the 2.3 mg/L DO criterion to various water body types through exclusion. The eastern LMRAP study, resulting UAA and subsegment revisions focused only on stream water body types; lakes, bays, canals and other water body types were not included in the study and the 2.3 mg/L criterion is not proposed for application to other water body-type subsegments.

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2. Use of "Ecoregion boundary" in subsegment descriptions. LDEQ revised the description for subsegment 040302 from "Amite River – From LA-37 to Amite River Diversion Canal" to "Amite River – From La. Highway 37 to *LMRAP Ecoregion boundary*" (italics added for emphasis). The following is a list of all subsegments in which LDEQ has similarly referred to the ecoregion boundary in subsegment descriptions:

- 040302 and 040306
- 040904 and 040914
- 040908 and 040917
- 040902 and 040913
- 040905 and 040915
- 041204

While we understand that subsegment boundaries were revised to better reflect ecoregion boundaries (and do not have concerns with this approach), we believe it would be clearer (for

on-the-ground reference/ implementation) to refer to latitude/longitude or actual physical features (e.g., distance + direction from nearby road or highway crossing) in the subsegment descriptions rather than referring to “ecoregion boundary.” (Note that this comment only pertains to the subsegment descriptions themselves, not to the boundary delineations.)

LDEQ Response

2. When revising the subsegment descriptions of the subsegment delineations in question, distinguishing physical features were considered; however those physical features were not available that could be used as references, and latitude/longitude is not used in LAC 33:IX.1123, Table 3. It was determined that ecoregion boundary was the most appropriate description that could be used. Latitude/longitude information is stored in LDEQ databases, along with other pertinent information that can be extracted from the databases when needed for sampling events and other activities.

EPA R6 Questions (for informal discussion):

We appreciate LDEQ’s December 10, 2014, response to a comment in EPA’s November 25, 2013, technical approval of the eastern LMRAP UAA for the revision of DO criteria. EPA’s comment pertained to the appropriateness of applying the 2.3 mg/L DO criterion to estuarine segments and tidally-influenced streams. LDEQ’s response indicates that the eastern LMRAP UAA does cover tidally-influenced reference waters and some areas with estuarine characteristics.

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3. Given the above, we assume that LDEQ plans to apply the 2.3 mg/L DO criterion (applicable Mar through Nov) to all streams (including those tidally-influenced) within the “estuarine” subsegments, not just to inland, freshwater streams (please confirm).

LDEQ Response

3. LDEQ plans to apply the 2.3 mg/L DO criterion (applicable March through November) to the streams in the eastern LMRAP Ecoregion as indicated in the draft rule, WQ091.

EPA R6 Comment

4. Were eastern LMRAP reference sites 0264 (Pass Manchac) and 3496 (Middle Bayou) among the noted tidally-influenced reference waters? (We assume so, given the much higher specific conductivity levels at these two sites compared to others.) Also, we were wondering if LDEQ could elaborate on why there was such a high total abundance at site 0264. Were there other reference sites also considered to be tidally-influenced? (Table D-1 of the eastern LMRAP UAA indicates that Striped Mullet and Gulf Menhaden were both highly abundant and present in 12 and 5 collections, respectively).

LDEQ Response

4. All waters in the LMRAP Ecoregion are influenced by tides, as outlined in the *Louisiana Water Quality Standards Ecoregions: For use in Ecologically-Driven Water Quality Standards*ⁱ (Delineation Document) and the January 10, 2008 Memorandum of Agreement between the EPA R6 and LDEQⁱⁱ. While maintaining the ecoregion approach as an acceptable management tool approved by EPA R6, LDEQ recognizes the variability of characteristics within the ecoregion, in particular in zones of transition between ecoregions. Gulf menhaden and striped mullet are schooling fish, and when present, should be expected in high abundance.

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5. As we understand, the objective of eastern LMRAP UAA was to complete a qualitative and quantitative ecological comparison between streams in the eastern and western portions of the LMRAP ecoregion. The purpose for the comparison was to evaluate the appropriateness of applying the Mar-Nov 2.3 mg/L DO criterion (originally developed for streams in the western portion of the LMRAP) to streams in the eastern portion of the LMRAP. If there was a greater prevalence of tidally-influenced reference streams in the eastern LMRAP compared to the western LMRAP (which seems to be the case), can LDEQ elaborate on how this difference was considered in the comparison and in the ultimate determination that it would still be appropriate to apply the 2.3 mg/L DO criterion to streams in the eastern LMRAP? (Note that we only pose these questions to further our general understanding of how LDEQ considered this topic in its evaluation; our questions are not intended to express a position one way or the other on the topic.)

LDEQ Response

5. Again, LDEQ recognizes the variability of characteristics within the ecoregion. The LMRAP Ecoregion characteristics are outlined in the Delineation Document. Reference streams were selected from within the LMRAP Ecoregion boundaries according to the protocol outlined in the 2008 MOA between EPA R6 and LDEQ and as outlined in the EPA R6-approved QAPPⁱⁱⁱ for the eastern LMRAP study. The emphasis for selecting reference streams is that they be least-impacted.

ⁱ Louisiana Department of Environmental Quality. 2014. *Louisiana Water Quality Standards Ecoregions: For Use in Ecologically-Driven Water Quality Standards*. Office of Environmental Services, Water Permits Division, Baton Rouge, Louisiana.

ⁱⁱ U.S. Environmental Protection Agency Region 6 and Louisiana Department of Environmental Quality. 2008. *Memorandum of Agreement: Establishment of Ecoregion-Based Dissolved Oxygen Criteria and Assessment Methods*.

ⁱⁱⁱ Louisiana Department of Environmental Quality. 2013. *Quality Assurance Project Plan (QAPP) for Evaluation of Aquatic Life Uses and Dissolved Oxygen Criteria and Collection of Minerals and Nutrient Data to Support Ongoing Criteria Development Efforts in the Lower Mississippi River Alluvial Plains Ecoregion*. Office of Environmental Services, Water Permits Division, Baton Rouge, Louisiana.